

Complete Summary

GUIDELINE TITLE

Use of antibiotics in adults.

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Use of antibiotics in adults. Singapore: Singapore Ministry of Health; 2000 Apr. 78 p. [124 references]

COMPLETE SUMMARY CONTENT

SCOPE
 METHODOLOGY - including Rating Scheme and Cost Analysis
 RECOMMENDATIONS
 EVIDENCE SUPPORTING THE RECOMMENDATIONS
 BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
 QUALIFYING STATEMENTS
 IMPLEMENTATION OF THE GUIDELINE
 INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT
 CATEGORIES
 IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

- Upper respiratory tract infections (common cold, acute laryngitis, sore throat, streptococcal pharyngitis, acute sinusitis, and acute otitis media)
- Acute and chronic bronchitis
- Community acquired pneumonia
- Hospital acquired pneumonia
- Urinary tract infections (asymptomatic bacteriuria, pyelonephritis, cystitis, prostatitis)

GUIDELINE CATEGORY

Diagnosis
 Management
 Risk Assessment
 Treatment

CLINICAL SPECIALTY

Critical Care
 Emergency Medicine

Family Practice
Geriatrics
Infectious Diseases
Internal Medicine
Nursing
Obstetrics and Gynecology
Otolaryngology
Pathology
Pharmacology
Pulmonary Medicine
Urology

INTENDED USERS

Advanced Practice Nurses
Clinical Laboratory Personnel
Health Care Providers
Hospitals
Nurses
Pharmacists
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

Overall Objectives

- To provide a practical approach to the use of antibiotics for all doctors, both in the primary health care sector as well as in hospital services
- To promote the proper and appropriate use of antibiotics

Specific Objectives

- To assist doctors in establishing a quick diagnosis
- To assist doctors in ordering laboratory and radiological investigations
- To assist doctors in assessing the severity of a condition and indications for hospital admission
- To assist doctors in deciding on the indications, choice and duration of antibiotic use

TARGET POPULATION

Adult and elderly patients in Singapore

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Risk Assessment and Stratification

1. Use of a clinical score to differentiate between viral and bacterial sore throat
2. Consideration of other signs and symptoms as well as psychosocial influences in patients presenting with sore throat

3. Consideration of type and duration of signs and symptoms in acute sinusitis
4. Use of chest x-ray in diagnosis of pneumonia
5. Risk stratification in community acquired pneumonia based on age, comorbid conditions, radiological signs of severe disease, and laboratory abnormalities
6. Microbiological tests for community acquired pneumonia (sputum Gram stain, cultures, pleural fluid Gram stain and cultures, urine for Legionella)
7. Other diagnostic tests for community acquired pneumonia, such as blood counts with differentials and smear for toxic granulation, biochemistry, human immunodeficiency virus testing and work-up for Pneumocystis carinii, and serological testing for atypical agents
8. Urine analysis and urine culture for urinary tract infection
9. Additional investigations of the urinary tract, such as renal imaging and intravenous urography, ultrasonography, voiding cystourethrogram, prostatic massage and cultures

Appropriate choice and use of antibiotic therapy based on site of infection, likely cause of infection, potential for side effects and drug interactions. The following antibiotics were considered:

1. Penicillins such as penicillin V and G, ampicillin, amoxicillin, cloxacillin, and piperacillin
2. Beta-lactam and beta-lactamase inhibitor combinations such as ampicillin-sulbactam, amoxicillin-clavulanate potassium, and piperacillin-tazobactam
3. First-generation cephalosporins such as cefazolin, cephalexin
4. Second-generation cephalosporins such as cefadroxil, cefaclor, cefuroxime axetil
5. Third-generation cephalosporins such as ceftazidime and ceftriaxone
6. Fourth-generation cephalosporins such as cefepime and ceftazidime
7. Monobactams such as aztreonam
8. Carbapenems such as meropenem and imipenem/cilastatin
9. Aminoglycosides such as gentamicin, amikacin, and netilmicin
10. Tetracyclines such as tetracycline hydrochloride, doxycycline, and minocycline
11. Lincosamides such as clindamycin
12. Macrolides such as erythromycin, clarithromycin, and azithromycin
13. Glycopeptides such as vancomycin and teicoplanin
14. Metronidazole
15. Sulphonamides such as trimethoprim-sulphamethoxazole
16. Nitrofurantoin
17. Nalidixic acid
18. Fluoroquinolones such as ciprofloxacin, norfloxacin, ofloxacin, sparfloxacin, grepafloxacin, levofloxacin, and trovafloxacin

MAJOR OUTCOMES CONSIDERED

- Predictive value of diagnostic indicators
- Bacteriological and clinical response to antibiotic therapy
- Antimicrobial resistance
- Morbidity and mortality due to antimicrobial resistance
- Length of hospital stay
- Cost of health care

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The definition of the levels of evidence and grading of recommendations in these guidelines emulate those used by the Scottish Intercollegiate Guidelines Network (SIGN), which originate from the U.S. Agency for Health Care Policy and Research.

Levels of Evidence

I a Evidence obtained from meta-analysis of randomised controlled trials.

I b Evidence obtained from at least one randomised controlled trial.

II a Evidence obtained from at least one well-designed controlled study without randomisation.

II b Evidence obtained from at least one other type of well-designed quasi-experimental study.

III Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

IV Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

Grade A (evidence levels Ia, Ib) Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III) Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV) Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

GPP (good practice points) Recommended best practice based on the clinical experience of the guideline development group.

COST ANALYSIS

The guideline developers reviewed published cost analyses.

Cost-Effective Management of Community Acquired Pneumonia

The hospital management of community acquired pneumonia (CAP) is much more expensive than outpatient care. Low-risk patients experience very good outcomes and may be safely managed on oral antibiotics with proper follow-up and monitoring. These low-risk patients may constitute up to 75% of all patients with CAP and 20% of patients hospitalized with pneumonia. The correct identification and appropriate outpatient treatment of these cases is therefore a key aspect of cost-effectiveness in the management of CAP.

Step-Down or Switch Therapy in Low-Risk Categories

Patients who were initially in the low risk categories and who respond promptly to empirical antibiotics constitute up to 33% of hospitalized CAP. A rapid step-down or switch therapy from intravenous (IV) to oral antibiotics and prompt discharge from the hospital have been found to be a safe (relapse rates ~1% with no mortality) and cost-effective strategy. The switch to oral medication is usually instituted on day 3 when resolution of fever occurs and the patients go home on day 4. With conventional management, these patients remain in the hospital for about 6 to 7 days.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Each recommendation is rated based on the levels of the evidence and the grades of recommendation. Definitions of the grades of the recommendations (A, B, C, Good Practice Points) and levels of the evidence (Level I - Level IV) are presented at the end of the Major Recommendations field.

Upper Respiratory Tract Infections

Common Cold

A - Antimicrobial agents should not be given for the common cold. (Grade A, Level Ib)

C - Mucopurulent rhinitis frequently accompanies the common cold. It is not an indication for anti-microbial treatment. (Grade C, Level IV)

Sore Throat

A - Sore throat should not be routinely treated with antibiotics. There is a favourable outcome in the majority of cases even when antibiotics are withheld. (Grade A, Level Ib)

A - Antibiotics should not be used to secure symptomatic relief in sore throat. (Grade A, Level Ib)

B - The use of a clinical score helps to differentiate between viral and bacterial sore throat. (Grade B, Level IIb)

B- Acute epiglottitis should be considered in a sore throat associated with stridor or respiratory difficulty. Urgent referral to hospital is mandatory and attempts to examine the throat should be avoided. (Grade B, Level III)

GPP - Practitioners should be aware of underlying psychosocial influences in patients presenting with sore throat.

GPP - Practitioners should be aware that infectious mononucleosis may present with severe sore throat with exudates and anterior cervical lymphadenopathy, and should avoid prescription of ampicillin-based antibiotics, including amoxicillin-clavulanic acid, as first line treatment.

GPP - In severe cases of sore throat, where the practitioner is concerned about the clinical condition of the patient, antibiotics should not be withheld.

B - Penicillin V remains the drug of choice for treating Group A streptococcal pharyngitis (GAS). (Grade B, Level III)

B - An alternative choice for those sensitive to penicillin is erythromycin for ten days. (Grade B, Level III)

B - The use of extended spectrum macrolides (e.g. clarithromycin) or azalides (e.g. azithromycin) in treating pharyngitis should be discouraged. (Grade B, Level III)

Acute Sinusitis

B - Uncomplicated upper respiratory tract infections (URTIs) and bacterial sinusitis may not be distinguished solely by clinical features alone. The duration of the signs and symptoms, rather than their mere presence, best distinguishes these two conditions. (Grade B, Level IIb)

A - Amoxicillin/amoxicillin-clavulanate should be used in the first line treatment of acute bacterial sinusitis. (Grade A, Level Ia)

A - Patients who do not respond to amoxicillin therapy should be treated with a second line antimicrobial agent, namely, azithromycin or clarithromycin. (Grade A, Level Ib)

A - The duration of treatment should be limited to 7 days beyond the point of substantial improvement or resolution of signs and symptoms; this is usually a 10 to 14-day course of treatment. (Grade A, Level Ib)

Acute Laryngitis

A - In adults with acute laryngitis, antibiotics are not indicated routinely. (Grade A, Level Ib)

Acute Otitis Media

A - The treatment effect of antibiotics in acute otitis media is small and clinical judgement is important. (Grade A, Level Ia)

A - In otitis media with effusion, antibiotics are indicated only if the effusion is accompanied by a new onset of local or systemic disease or with bilateral effusions. (Grade A, Level Ia)

B - The choice and duration of antibiotic therapy depends on the clinical presentation and the prevalence of resistant organisms. (Grade B, Level III)

B - For a new otitis media episode in a patient with a previous treatment failure, first line drugs (e.g. amoxicillin or trimethoprim-sulphamethoxazole) are just as

effective as broader spectrum, more expensive second line antibiotics (e.g. clarithromycin, azithromycin). (Grade B, Level IIb)

Bronchitis

Acute Bronchitis

B - Antibiotic therapy should not be withheld if the patient is ≥ 60 years or ill at the outset (Macfarlane et al., 1993; Macfarlane et al., 1994). (Grade B, Level III)

Chronic Bronchitis

A - An acute infective exacerbation of chronic bronchitis benefits from antibiotic therapy (Anthonisen et al., 1987; Grossman et al., 1988). (Grade A, Level 1a)

Community Acquired Pneumonia (CAP)

A - Pneumonia can only be diagnosed reliably with a chest radiograph (Wipf et al., 1999). (Grade A, Level Ib)

B - Risk stratification is a key step in the management of community acquired pneumonia (CAP) (Bartlett et al., 1998; Fine et al., 1997; Mandell & Niederman, 1993; Niederman et al., 1993; The British Thoracic Society, 1993). (Grade B, Level III)

C - Specific microbiological, haematological, biochemical and serological tests are recommended for patients upon hospitalization (Bartlett et al., 1998; Fine et al., 1997; Mandell & Niederman, 1993; Niederman et al., 1993; The British Thoracic Society, 1993). (Grade C, Level IV)

B - Antibiotic recommendations for empirical therapy are based on the risk category and relative prevalence of major pathogens (Fine et al., 1997; Gleason et al., 1999; Stahl et al., 1999). (Grade B, Level III)

A - A switch from intravenous (IV) to oral antimicrobials is recommended for patients in low-risk categories responding promptly to empirical antimicrobials (Stahl et al., 1999). (Grade A, Level Ib)

Hospital Acquired Pneumonia (HAP)

B - The classification of hospital acquired pneumonia and recommendations for initial empirical therapy are based upon targeting therapy against a group of core pathogens according to severity of illness, duration of hospitalisation and risk factors for specific pathogens (American Thoracic Society, 1995; Bruchhaus, McEachern & Campbell, 1998; Grossman, 1998; Mandell & Campbell, 1998; McEachern & Campbell, 1998). (Grade B, Level III)

Urinary Tract Infections (UTIs)

Asymptomatic bacteriuria

A - Antibiotic therapy is not recommended in the management of patients with asymptomatic bacteriuria, except in pregnant women. (Grade A, Level I b)

UTI in Women

A - The treatment options for cystitis in women include 1st and 2nd generation cephalosporins, trimethoprim-sulphamethoxazole, nitrofurantoin, fluoroquinolones or trimethoprim. (Grade A, Level I b)

B - In treatment of cystitis in women, the recommended duration of therapy with cephalosporins, nitrofurantoin and trimethoprim is 7 days. An alternative option is nalidixic acid for 7 days. (Grade B, Level III)

A - In treatment of cystitis in women, the recommended duration of therapy with trimethoprim sulphamethoxazole or fluoroquinolone is 3 days. (Grade A, Level I b)

A - Single dose regimens are less effective than multi-day regimens and are not recommended for routine use in treatment of cystitis in women. (Grade A, Level I a)

B - Women with recurrent UTI can be treated with continuous low dose antibiotic prophylaxis or post-coital prophylaxis for 3 to 6 months. Trimethoprim-sulphamethoxazole, nitrofurantoin, cephalexin or trimethoprim are effective agents. (Grade B, Level II a)

UTI in Men

B - The recommended treatment for UTI due to acute prostatitis is trimethoprim-sulphamethoxazole or fluoroquinolones for 4 weeks. (Grade B, Level III)

B - The recommended treatment for UTI due to chronic bacterial prostatitis is trimethoprim-sulphamethoxazole or fluoroquinolones for 12 weeks. (Grade B, Level III)

C - The treatment options for chronic abacterial prostatitis are doxycycline or erythromycin. (Grade C, Level IV)

Pyelonephritis in Women

B - For acute pyelonephritis in women, initial treatment with intravenous 1st or 2nd generation cephalosporin together with an aminoglycoside is recommended for hospitalized patients. Alternative regimens utilizing a 3rd generation cephalosporin, beta-lactam beta-lactamase inhibitor combinations or fluoroquinolones are also effective. The options for empirical oral treatment for mild illness include 1st and 2nd generation cephalosporins, oral beta-lactam beta-lactamase inhibitor combinations or fluoroquinolones. When the results of urine culture become available, antibiotic therapy should be modified and a 14-day course of therapy completed. (Grade B, Level III)

UTI in Pregnancy

A - Asymptomatic bacteriuria in pregnancy should be treated with antibiotics, based on culture and sensitivity, to reduce the risk for pyelonephritis and other complications. (Grade A, Level Ia)

B - Empirical therapy for acute cystitis in pregnancy with 1st or 2nd generation cephalosporin, nitrofurantoin or trimethoprim-sulphamethoxazole (caution in 3rd trimester) is recommended. Treatment should be modified based on culture results and appropriate antibiotics should be administered for 7 days. (Grade B, Level III)

B - Empirical therapy for pyelonephritis in pregnancy with a 3rd generation cephalosporin is recommended. Treatment should be modified based on culture results and appropriate antibiotics should be administered for 14 days. (Grade B, Level III)

Complicated UTIs

C - Complicated UTIs should be treated based on cultures and sensitivity. When symptoms warrant initiation of empirical therapy, cultures must be obtained prior to antibiotic therapy and therapy modified based on results. (Grade C, Level IV)

A - For patients with a complicated UTI of mild to moderate severity, treatment with oral fluoroquinolones or trimethoprim-sulphamethoxazole is recommended. (Grade A, Level 1b)

C - Alternative regimens for treatment of complicated UTI of mild to moderate severity include 1st and 2nd generation cephalosporins or beta-lactam beta-lactamase inhibitor combinations. (Grade C, Level IV)

C - For ill, hospitalized patients with a complicated UTI, intravenous treatment with a 3rd generation cephalosporin, fluoroquinolones or beta-lactam beta-lactamase inhibitor combinations are recommended. Alternative regimens utilizing intravenous ampicillin together with an aminoglycoside are also effective. (Grade C, Level IV)

Infections in the Elderly

Pneumonia

C - The treatment of community acquired pneumonia in the elderly should follow the recommendations in chapter 5 of the original guideline. These guidelines have taken into consideration patients over age 60. (Grade C, Level IV)

C - The guidelines for treatment of hospital acquired pneumonia in chapter 6 of the original guideline document are applicable to the elderly. (Grade C, Level IV)

B - Isolation of organisms in elderly patients with pneumonia is often difficult as a result of difficulties in sputum collection and likelihood of contamination by Gram-negative pathogens colonizing the oropharynx. Empirical treatment is usually necessary (Feldman, 1999). (Grade B, Level III)

Upper Respiratory Tract Infection

GPP - In the absence of specific studies in the elderly, the recommendations for the use of antibiotics in upper respiratory infections in chapter 3 of the original guideline document should be followed.

UTIs

C - The recommendations on treatment of asymptomatic bacteriuria (Boscia, Abrutyn & Kaye, 1981), cystitis in women, UTI in men and complicated UTI in chapter 7 of the original guideline document are applicable to the elderly. (Grade C, Level IV)

A - Nursing home residents have a high prevalence of asymptomatic bacteriuria even when indwelling catheters are not used. Treatment has not been shown to be of benefit and is associated with reinfection with resistant organisms (Nicolle, Mayhew & Bryan, 1987; Williams & Berk, 1994). (Grade A, Level Ib)

B - Patients on indwelling catheters often develop pyuria and bacteriuria. Antibiotics should only be given in the presence of sepsis (fever, change in functional status attributable to infection, leucocytosis) (Warren, 1992). (Grade B, Level III)

Definitions:

Grades of Recommendation

Grade A (evidence levels Ia, Ib) Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

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Grade C (evidence level IV) Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

GPP (good practice points) Recommended best practice based on the clinical experience of the guideline development group.

Levels of Evidence

Ia Evidence obtained from meta-analysis of randomised controlled trials.

Ib Evidence obtained from at least one randomised controlled trial.

IIa Evidence obtained from at least one well-designed controlled study without randomisation.

II b Evidence obtained from at least one other type of well-designed quasi-experimental study.

III Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

IV Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

CLINICAL ALGORITHM(S)

The original guideline contains a clinical algorithm for the management of community acquired pneumonia.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- The appropriate antimicrobial selection, dosage and duration of treatment will slow the emergence of resistance among micro-organisms and preserve some useful activity of current antibiotics for the near future.
- Patients in compliance with antibiotics to achieve cure help to prevent the development of resistance.
- Containment of spiraling costs associated with more expensive 2nd or 3rd line antibiotics that often have to be given by the parenteral route, leading to hospitalization expenses and loss of working days. Additionally, the correct identification and appropriate outpatient treatment of low-risk patients is key for cost-containment.

POTENTIAL HARMS

All antibiotics carry the risk of adverse effects and drug interactions. The annex of the original guideline document contains a detailed list of adverse effects and drug interactions of antibiotics in general clinical use.

Subgroups Most Likely to be Harmed:

Increased Risk of Drug Interactions and Adverse Drug Reactions in the Elderly

- The elderly have multiple co-morbidities and polypharmacy and the clinician should be aware of concomitant medications and the possibility of drug interactions (refer to annex in the original guideline document).
- Aminoglycosides should be used with care owing to their propensity for ototoxicity and nephrotoxicity. Elderly patients with decreased renal function will have decreased aminoglycoside clearance and require lower doses or prolonged dosing intervals. The serum creatinine level is a poor indicator of renal function in the elderly as it is lowered with decreasing muscle mass. The estimation of creatinine clearance using various equations has its limitations. Dehydrated patients have a smaller volume of distribution and will require lower doses to achieve peak serum concentrations. Those in heart failure or with ascites on the other hand have an expanded distribution volume and decreased aminoglycoside clearance. Hence, the use of aminoglycosides in the elderly must be individualised and adjusted with therapeutic drug monitoring.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This guideline is not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.
- The contents of this guideline document are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to this guideline may not ensure a successful outcome in every case, nor should it be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Recommendations for Evaluation

Upper respiratory tract infections

Since antimicrobial agents should not be given for the common cold, a suitable audit parameter would be the proportion of patients in a practice diagnosed as having the common cold and yet prescribed antimicrobials.

Community Acquired Pneumonia (CAP)

A recent prospective study showed that the key outcomes in adult patients with CAP (length of hospitalisation and mortality) in Singapore are comparable with those from large studies in developed countries. The average length of stay was

8.4 days and mortality rate 13%. There is little evidence that longer stays are associated with better outcomes.

Urinary tract infections

Empirical therapy is recommended based on the sensitivities of potential pathogens to antibiotics, while attempting to reserve the use of more potent, broad spectrum antibiotics for more serious infections. The failure of first line antibiotic therapy to be effective may indicate the emergence of bacterial resistance to these antibiotics. Monitoring the use of first line versus alternative antibiotic therapy will serve as an audit of adherence to guidelines as well as to detect such emergence and therefore signal the need to modify the guidelines.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Use of antibiotics in adults. Singapore: Singapore Ministry of Health; 2000 Apr. 78 p. [124 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Apr

GUIDELINE DEVELOPER(S)

Singapore Ministry of Health - National Government Agency [Non-U.S.]

SOURCE(S) OF FUNDING

Singapore Ministry of Health (MOH)

GUIDELINE COMMITTEE

Workgroup on Antibiotics in Adults

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Workgroup Members: Dr Roland Chong (Chairman); Dr Anantharaman Vathsala; Dr Brenda Ang; Assoc Prof Goh Lee Gan; Dr Lee Kheng Hock; Assoc Prof Lim Tow Keang; Dr Ling Moi Lin; Dr Alfred Loh; Dr Pang Weng Sun; Dr Soh Cheow Beng

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Singapore Ministry of Health Web site](#).

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on May 20, 2003. The information was verified by the guideline developer on June 3, 2003.

COPYRIGHT STATEMENT

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